

Appln No.: 10/724,369

Amendment Dated: June 8, 2009

Reply to Office Action of April 15, 2009

REMARKS/ARGUMENTS

This is in response to the Office Action mailed April 15, 2009 for the above-captioned application. Reconsideration and further examination are respectfully requested.

Amendments to the specification have been made to correct typographical errors.

This amendment is filed by the newly appointed attorney (Power of Attorney filed on 5/26/2009) and accompanies an RCE in view of the finality of the prior rejection. New claims are presented herein to more clearly and completely define the invention. Non-elected subject matter has been canceled without prejudice.

Independent claim 18 refers to an orthopedic system with a cannula, an electroactive polymer transducer, and a power source connected to the transducer and corresponds generally to prior claim 7. It identifies the first (non-powered) size/shape of the transducer with respect to the interior lumen of the cannula, and the second (powered) size with reference to the ability to create a cavity within cancellous bone (see prior claim 8).

New claims 19 and 21 include specifics as to the structure of the system and is supported on Page 9, lines 4-19 and Fig. 3. New claim 20 is supported on Page 10, lines 6-10. New claims 22 and 23 recite a frame as an additional part of the transducer. This is supported on Page 11, lines 20-21 and Fig. 4, part 41. Claims 24 and 25 recite the way in which the electrical power source is connected to the transducer, and are supported on Page 11, lines 20-22.

Independent claim 26 refers to a method of using the orthopedic system of claim 18 and corresponds generally to previously 14. Dependent method claims have limitations similar to claims 19-25 and also recite method features such as insertion of the transducer with the cannula (as illustrated in Fig. 3) or through the cannula (Page 11, line 5). Removal of the cannula (original claim 15) and leaving the transducer behind (Page 8, lines 2-4) are recited in claims 36 and 37. Specific bones targeted in the method, and the introduction of bone cement are recited in claims 38-40. (See Page 11, lines 13-16)

The previously pending claims were rejected under 35 USC § 103(a) as unpatentable over the combination of Layne et al. (US 2002/0026195) in View of Ashley. Layne discloses expandable structures **such as balloons** which are inserted into bone to create cavities. The Examiner says these are expansion mechanisms. Ashley relates to the use of electroactive polymers as artificial muscles. The Examiner says that these are also used as expansion mechanisms and thus argues that using the electroactive polymer of Ashley in place of the balloon of Layne would have been obvious. Applicants respectfully disagree.

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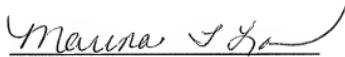
As a first matter, the examiner has not clearly stated the basis for the statement the "the transducer of Ashley is used as an expansion mechanism." While it is true that Ashley states that electricity can make a polymer expand (at least in one dimension) this is not the same thing as saying that the polymer can expand against any significant load. Indeed, in the context of a true artificial **muscle**, it is contraction not expansion against load that is desired. Despite the many applications described in Ashley, none of them is the same as a balloon expander for creating a cavity in a material that has to be compressed.

Furthermore, from the standpoint of function, the balloon expander has a different action than anything shown in Ashley. As shown in Ashley (Page 54), the basic result of activating an artificial muscle is asymmetric, with expansion of the plane being compensated for by a contraction in its thickness (since the volume must stay the same). In contrast, the balloon expands in all free dimensions (those not blocked by a support) through stretching of the surface of the material, and the volume occupied by the balloon very clearly changes.

Because of this, nothing apart from the present invention suggests that combination of references being proposed by the examiner. The artificial muscle is not shown by Ashley to perform a cavity creating function. Furthermore, the creation by the Examiner of a broad genus to which both artificial muscles and balloons arguably belong is not enough to establish that the two species would have been recognized in the art as substitutes for one another. Indeed, if this were true, then using horses that go up and down as seats on a roller coaster is obvious because both merry-go-rounds and roller coasters are amusement park rides.

For these reasons, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully submitted,



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